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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/042,647	01/08/2002	Kenneth Perlin	KPER-5	4255

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EXAMINER	
CASCHERA, ANTONIO A	

ART UNIT	PAPER NUMBER
2676	5

DATE MAILED: 03/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/042,647	PERLIN, KENNETH	
	Examiner	Art Unit	
	Antonio A Caschera	2676	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 15-18* is/are rejected.

7)☒ Claim(s) *12-14* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

It does not identify the mailing or post office address of each inventor. A mailing or post office address is an address at which an inventor customarily receives his or her mail and may be either a home or business address. The mailing or post office address should include the ZIP Code designation. The mailing or post office address may be provided in an application data sheet or a supplemental oath or declaration. See 37 CFR 1.63(c) and 37 CFR 1.76.

In response to applicant's arguments, see page 7 of Applicant's Remarks, that the post office and residence address are one in the same, the office takes note to such information however, the declaration must state in the "Post Office Address" "Same as above," "Same as residence," or something to this nature as a blank entry does not automatically show that both addresses are one in the same.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 9, 11 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In reference to claim 9, claim 9 fails to particularly point out and distinctly explain the interconnectivity of the variables and equations found in the claim. For example, the manner in which, "b(i,j,k,0)" is releated to "b(i,j,k,B), the significance of the parameter "b," and how the "patternIndex" relates to the, "bitPatterns[]" are not clearly explained in the claim language of claim 9. A better explanation of how each of these entities are linked is required in the claim.

In reference to claim 11, the variable, " s " is not defined in the claim, thus the claim is indefinite because there is no concise meaning to the value. The office asks what the value of s represents, does s = skew? The office suggests adding an identifying clause to the claim such as, "wherein s defines..." or something to that effect.

In reference to claim 15, the function, " O( ) " is not defined in the claim, thus the claim is indefinite because there is no concise meaning to the value. Note, in response to applicant's arguments on page 8 of Applicant's Remarks, the office believes such a function should be defined in the claims as without such definition, the function could be equated to a negligible value such as 0 or 1, for example. For prior art rejections, such a term will not be deemed critical in light of the lack of clarity of it's definition.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 3-6, 10 and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Morris (U.S. Patent 6,088,036).

In reference to claims 1 and 5, Morris discloses a method and apparatus for generating an image comprising a computer and a display connected to the computer upon which images are displayed (see column 1, lines 15-20 and 29-30 and Figure 1). Note the office interprets the labeled blocks of Figure 1 to be comprised within a computer as the components of a computer are well known in the art to include these components in particular, the input and output apparatus as disclosed by Morris in Figure 1 labeled "INP" and "DIS" (Official Notice). Morris also discloses geometry and rendering modules (see "GEOM" and "DRW" of Figure 1) used to produce images and found within the computer (see column 4, lines 17-35 and Figure 1). Morris discloses generating the images in a regular two-dimensional pixel array (see column 1, lines 30-32) which the office interprets as substantially similar to a grid. Morris also discloses generating the images reducing aliasing artifacts produced by primitive edges sloping relative to the pixel array axes (see column 1, lines 61-65) (Also see Response to Arguments below).

In reference to claim 3, Morris discloses all of the claim limitations as applied to claim 1 above in addition, Morris discloses the apparatus to include an input means such as a keyboard allowing the user to manipulate or modify data in the computer (see column 4, lines 12-16 and "INP" of Figure 1).

In reference to claim 4, Morris discloses all of the claim limitations as applied to claim 1 above. Morris discloses generating the images in a regular two-dimensional pixel array (see column 1, lines 30-32) which the office interprets as substantially similar to a grid. Morris further discloses the rendering module (see "DRW of Figure 1) to include a 2-D array of pixel values (see column 4, lines 30-35).

In reference to claim 6, Morris discloses all of the claim limitations as applied to claim 5 above in addition, Morris discloses the apparatus to include an input means such as a keyboard allowing the user to manipulate or modify data in the computer (see column 4, lines 12-16 and "INP" of Figure 1).

In reference to claim 10, Morris discloses all of the claim limitations as applied to claim 6 above in addition, Morris discloses translating 2-dimensional image coordinates (x, y) from the viewing space to screen coordinates including a z coordinate indicating the depth of the object into the screen (see column 4, lines 17-30). Note the office interprets such a translation substantially similar to placing input coordinates into a simplicial grid or screen coordinate space. The office suggests amending claim 10 to further explain the term, "simplicial grid."

In reference to claim 17, Morris discloses all of the claim limitations as applied to claim 3 above in addition, Morris discloses the apparatus to include an input means such as a keyboard allowing the user to manipulate or modify data in the computer (see column 4, lines 12-16 and "INP" of Figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (U.S. Patent 6,088,036).

In reference to claim 2, Morris discloses all of the claim limitations as applied to claim 1 above. Although Morris discloses the image generating apparatus to comprise of a database storing model data (see columns 3-4, lines 67-3) Morris does not explicitly disclose the geometry and rendering modules to include software disposed in the computer memory. It is well known in the art that renders and processors include software in order to execute commands as such software is stored in some sort of memory (Official Notice). It would have been obvious to one of ordinary skill in the art for Morris to implement the image producing modules incorporating software disposed in computer memory because it is well known in the art that computer renders and processors include software, essential for directing execution, that is ultimately stored in some sort of memory.

In reference to claims 16 and 18, Morris discloses a method and apparatus for generating an image comprising a computer and a display connected to the computer upon which images are displayed (see column 1, lines 15-20 and 29-30 and Figure 1). Note the office interprets the labeled blocks of Figure 1 to be comprised within a computer as the components of a computer are well known in the art to include these components in particular, the input and output apparatus as disclosed by Morris in Figure 1 labeled "INP" and "DIS" (Official Notice). Morris

also discloses geometry and rendering modules (see "GEOM" and "DRW" of Figure 1) used to produce images and found within the computer (see column 4, lines 17-35 and Figure 1). Morris does not explicitly disclose producing a "visually isotropic" image however at the time the invention was made, it would have been obvious to one of ordinary skill in the art to modify the rendering of images of Morris to include producing "visually isotropic" images in order to reduce visual artifacts in all axes of the image included when rotating the image, reducing rotational artifacts, which ultimately help to produce a more realistic textured image in a 3-dimensional environment.

5. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (U.S. Patent 6,088,036) in view of (Perlin, "An Image Synthesizer." ACM Press, 1985).

In reference to claims 7 and 8, Morris discloses all of the claim limitations as applied to claim 6 above however Morris does not explicitly disclose generating a six bit quantity from an integer lattice point i, j k. Perlin discloses generating four real numbers from an integer lattice point, these numbers being made up of a plurality of bits further used to calculate gradient values (see page 289, column 2, bullet #1 of Perlin). It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the image generating system of Morris with the bit manipulations of Perlin in order to conserve statistical character under image rotation and translation (see page 289, columns 1-2, under "Noise()").

Response to Arguments

6. Applicant's arguments, see page 7, filed 1/2/2004, with respect to drawings have fully considered and are persuasive. The objection to the drawings has been withdrawn since minor informalities have been corrected. Note, a set of formal drawings is required.

7. Applicant's arguments, see pages 7-8, filed 1/2/2004, with respect to the 112, 1st paragraph rejection of claim 7. The 112, 1st paragraph rejection of claim 7 has been withdrawn since a concise explanation of the claim limitations has been performed.

8. Applicant's arguments filed 1/2/2004 have been fully considered but they are not persuasive.

In reference to claims 1-6, 10 and 16-18, the applicant argues that the Morris reference, "...does not teach or suggest anything about texture," (see pages 8-9 of Applicant's Remarks). The office strongly disagrees as Morris discloses a database storing a 3-D environment containing various 3-D objects modeled as a group of object primitives, the primitives representing a polygonal surface patch which in turn describe surface description including texture data (see columns 3-4, lines 67-8). Morris does disclose the invention directed towards texture data and therefore the office believes the rejection, based on Morris, to be just.

Allowable Subject Matter

9. Claims 9, 11-13 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

In reference to claim 9, the prior art of record (Morris (U.S. Patent 6,088,036) and Perlin, "An Image Synthesizer.") does not explicitly disclose the equation in combination with the further limitations of claim 9.

In reference to claim 11, the prior art of record (Morris (U.S. Patent 6,088,036) and Perlin, "An Image Synthesizer.") does not explicitly disclose the specific equations or there equivalences found in claim 11.

In reference to claim 12, claim 12 is objected to as being dependent upon rejected claim 11 from which claim 12 claims dependency.

In reference to claim 13, claim 13 is objected to as being dependent upon rejected claim 12 from which claim 13 claims dependency.

10. Claims 14 and 15 are objected to as being dependent upon rejected base claims, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In reference to claim 14, the prior art of record (Morris (U.S. Patent 6,088,036) and Perlin, "An Image Synthesizer.") does not explicitly disclose decomposing a hypercube into n! simplices where each simplex corresponds to an ordering of an edge traversal of the hypercube from its lowest vertex (0,0...0) to its upper vertex (1,1...1) in combination with further limitations of claim 5 from which claim 14 is dependent upon.

In reference to claim 15, claim 15 is dependent upon objected claim 14 and is therefore also objected to.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (703) 305-1391. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (703)-308-6829.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

aac

2/26/04

Matthew C. Bella

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